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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KWOK-WAI CHEUNG, KWONG-WING RAYMOND CHAN, GIN-MAN CHAN, and WING-KAI LAM

Appeal 2008-4283
Application 09/917,639
Technology Center 2400

Decided: November 14, 2008

Before JOSEPH F. RUGGIERO, JOHN A. JEFFERY, and CARLA M. KRIVAK, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 26-32. Claim 33 has been indicated as containing allowable subject matter (App. Br. 1). We have jurisdiction under 35 U.S.C. § 6(b). We affirm-in-part.

STATEMENT OF THE CASE

Appellants invented a system for transmitting data over a network to a client such as large-scale video-on-demand (VOD) systems. The invention utilizes two groups of data streams, one responsible for minimizing latency and the other for providing the requisite functions. Such a system provides a relatively small startup latency while enabling interactive functions of VOD systems.[1] Claim 26 is illustrative:

26. A system for transmitting data over a network to at least one client having a latency time to initiate transmission of said data to the client, including:

> at least one anti-latency signal generator for generating a plurality of anti-latency data streams containing at least a leading portion of data for receipt by a client; and
>
> at least one interactive signal generator for generating a plurality of interactive data streams containing at least a remaining portion of said data for the client to merge into after receiving at least a portion of an anti-latency data stream, wherein:
>
> > said data has a length *R*, and is fragmented into *K* segments each requiring a time *T* to transmit over the network;
> >
> > the interactive data streams include *N* interactive data streams, wherein
> >
> > > each of the *N* interactive data streams is repeated continuously within said interactive data stream, and wherein each successive interactive data stream is staggered by an interactive time interval = *KT/N*;

[1] *See generally* Spec. 4-6; Abstract.

> the anti-latency data streams include M anti-latency data streams, wherein the anti-latency data streams 1 to *M* are generated such that
>
> > an m^{th} anti-latency data stream has F_m segments, wherein F_m is an m^{th} Fibonacci number; and
> >
> > the F_m segments are repeated continuously within the m^{th} anti-latency data stream.

The Examiner relies on the following prior art references to show unpatentability:

Ganek	US 5,724,646	Mar. 3, 1998
Kermode	US 6,018,359	Jan. 25, 2000

The Examiner rejected claims 26-32 under 35 U.S.C. § 103(a) as unpatentable over Ganek and Kermode (Ans. 3-7).

Rather than repeat the arguments of Appellants or the Examiner, we refer to the Briefs and the Answer[2] for their respective details. In this decision, we have considered only those arguments actually made by Appellants. Arguments which Appellants could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Regarding representative independent claim 26,[3] Appellants argue that there is no apparent reason why ordinarily skilled artisans would have

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[2] Throughout this opinion, we refer to (1) the Appeal Brief filed July 2, 2007; (2) the Examiner's Answer mailed Oct. 3, 2007; and (3) the Reply Brief filed Dec. 3, 2007.

[3] Appellants argue claims 26-29 and 32 together as a group. *See* App. Br. 3-6. Accordingly, we select claim 26 as representative. *See* 37 C.F.R. § 41.37(c)(1)(vii).

combined the teachings of Ganek and Kermode as the Examiner proposes since the references are directed to entirely different techniques for providing on-demand video services. Appellants emphasize that Ganek utilizes two sets of data streams where each stream within each set is the same video data. According to Appellants, the entire program in Ganek is viewed by selecting a data stream on one of the secondary channels (i.e., a first ten minutes of the program) followed by selecting a data stream on one of the main channels (i.e., the entire program). Appellants contrast this technique with Kermode which segments a program among different channels and thus requires tuning to each channel in succession to view the program in its entirety (App. Br. 3-5). According to Appellants, modifying Ganek in light of Kermode would destroy Ganek's principle of operation (App. Br. 5; Reply Br. 3-4).

The Examiner responds that reducing buffer size motivates combining the references. The Examiner acknowledges that Ganek provides two different groups of streams with similar content, but takes the position that Kermode's segmenting technique can be applied to only one of the data streams, namely the data stream corresponding to the first ten-minute segment of the video transmitted on the secondary channels. The Examiner reasons that such a modification would reduce the buffer requirement for the initial ten-minute segment in Ganek and therefore provide a motivation to combine the references (Ans. 7-9).

The pivotal issue before us, then, is as follows:

ISSUE

Have Appellants shown that the Examiner erred in combining the teachings of Ganek and Kermode to arrive at the invention of representative claim 26? The issue turns on (1) whether there is a reason to combine the references, and (2) whether combining the teachings of Kermode with Ganek would destroy Ganek's principle of operation.

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence:

Ganek

1. Ganek discloses a video-on-demand (VOD) system where a video program is transmitted from a server to a viewbox using different channels of a transmission line. Specifically, six primary channels (101-106) are used to repeatedly transmit the entire hour-long program, and (2) nine secondary channels (107-115) are used to repeatedly transmit the first 10-minute (T_{stag}) portion of the program (Ganek, col. 7, l. 55 - col. 8, l. 16; Figs. 5a, 5b).

2. Each primary channel starts the same hour-long program at a different 10-minute interval. On each primary channel, the program is repeated from the beginning as soon as it ends (Ganek, col. 7, l. 58 - col. 8, l. 7; Fig. 5a).

3. Each secondary channel starts the same initial 10-minute portion at a different one-minute interval ($T_{lead\text{-}in}$). On each secondary channel, the

initial 10-minute portion is repeated from the beginning as soon as it ends (Ganek, col. 8, ll. 7-30; Fig. 5b).

4. After a user requests a video program, the viewbox (1) tunes to a secondary channel containing the nearest not-yet-commenced beginning portion of the requested program, and (2) concurrently tunes to the immediately previously-commenced primary channel containing the requested program and stores it in a buffer 180 (Ganek, col. 7, ll. 1-10; col. 8, ll. 37-65; Fig. 3 (Steps 430-440)).

5. At the conclusion of the initial 10-minute portion, the viewbox (1) terminates the secondary channel service connection, (2) reads the data stored in the buffer, and (3) splices the video frames stored in the buffer acquired from the primary channel with the end of the secondary channel transmission (Ganek, col. 7, ll. 24-31; Fig. 3 (Step 450)).

Kermode

6. Kermode discloses a VOD system in which different segments of video data (0-3) are repeatedly transmitted over an associated channel (P0-P3). Each segment has a relative length in accordance with a truncated Fibonacci sequence (Kermode, col. 7, ll. 8-14; Fig. 3).

7. In Kermode, data is downloaded two channels at a time. As shown in Figure 3, the first segment (0) on channel P0 is downloaded at an arbitrary time (t−1) (e.g., when a subscriber activates the set-top box). Concurrently, the second segment (1) on channel P1 is downloaded. After the first segment is downloaded at time (t), the third segment (2) begins downloading on channel P2 (Kermode, col. 7, ll. 17-44; Fig. 3).

8. A segment is not played back until it is downloaded in its entirety. As shown in Figure 3, the first segment (0) is played back at time (t) (Kermode, col. 7, ll. 21-25; Fig. 3).

9. Kermode's technique results in storage (buffer) requirements of the receiver which are, at most, 20% of the entire video (Kermode, col. 8, ll. 14-18; Fig. 5C).

PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Discussing the question of obviousness of claimed subject matter involving a combination of known elements, *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), explains:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida* [*v. AG Pro, Inc.,* 425 U.S. 273 (1976)] and *Anderson's-Black Rock*[*, Inc. v. Pavement Salvage Co*., 396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

KSR, 127 S. Ct. at 1740. If the claimed subject matter cannot be fairly characterized as involving the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement, a holding of obviousness can be based on a showing that "there was an apparent reason to combine the known elements in the fashion claimed." *Id*. at 1740-41. Such a showing requires

> some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

Id. at 1741 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

If the Examiner's burden is met, the burden then shifts to the Appellants to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

ANALYSIS

Claims 26-29 and 32

Appellants have not persuaded us of error in the Examiner's rejection of representative claim 26 based on the collective teachings of Ganek and Kermode. Appellants are correct (Reply Br. 2) that Ganek buffers data associated with the entire program on the primary channel (FF 4) and is silent regarding buffering data associated with initial 10-minute segment associated with the secondary channels. But we see no reason why data

associated with this initial segment could not be buffered using a technique similar to that disclosed by Kermode to achieve the concomitant advantages of such buffering noted by the Examiner.

Appellants acknowledge that the initial 10-minute segment in Ganek is not played back immediately, but rather "as soon as the next one commences" (Reply Br. 2). Ganek likewise acknowledges this playback delay after a user requests a program. At that point, the viewbox tunes to a secondary channel containing the nearest *not-yet-commenced* beginning portion of the requested program (FF 4) (emphasis added). Since each respective beginning portion is spaced from the other at one-minute intervals (FF 3), playback of a given beginning portion could be delayed up to one minute depending on when the user requested the program.

In view of this otherwise unused delay period, we see no reason why ordinarily skilled artisans could not utilize this period to buffer at least some video data associated with the initial 10-minute interval in Ganek using Kermode's technique. While the video data of Kermode is divided into different segments associated with different channels (FF 6), Kermode's system ensures that a segment is downloaded in its entirety before it is played back (FF 8). To this end, the first segment is downloaded at an arbitrary time before playback (t−1) (e.g., when a subscriber activates the set-top box) (FF 7).

We see no reason why such an arbitrary time to commence downloading could not be selected during the one-minute interval between the initial 10-minute portions on the secondary channels of Ganek (FF 3). That is, in light of Kermode, ordinarily skilled artisans could readily segment the initial 10-minute portions of video data of Ganek into

constituent segments on different channels and download data on each channel concurrently (FF 7). Such a system would, among other things, enable playback of the first, shorter segment of the initial 10-minute portion while the second, longer segment of that portion continues downloading. The efficiencies resulting from this buffering scheme (FF 9) would, in our view, only enhance Ganek's system.

We recognize, as do Appellants (Reply Br. 3-4), that such a modification to Ganek would entail transmitting the respective segments of the initial 10-minute portion on different channels to comport with Kermode's scheme (FF 6). And we further recognize that channels may have to be added to achieve this end which could add some level of complexity to Ganek's system. Nevertheless, this added complexity could very well be offset by the concomitant efficiency gains in terms of data buffering yielded by this improvement, particularly for data-intensive, high-bandwidth video applications in a multi-subscriber environment. In short, accounting for the relative advantages and disadvantages of such factors amounts to an engineering trade-off that is well within the level of ordinarily skilled artisans.

For the foregoing reasons, Appellants have not persuaded us of error in the Examiner's rejection of representative claim 26. Therefore, we will sustain the Examiner's rejection of that claim, and claims 27-29 and 32 which fall with claim 26.

Claim 30

We will not, however, sustain the Examiner's rejection of claim 30 which calls for each of the N interactive data streams to contain the

remaining portion of the data *only*. While the Examiner is correct that Kermode's system reduces bandwidth by reducing the amount of data associated with a particular channel (Ans. 6, 10), the claim requires that the *interactive* data streams contain *only* the remaining portion of the data. As Appellants indicate (App. Br. 6), Ganek discloses that the entire video program is contained within the main program channels. The Examiner has not shown—nor can we reasonably ascertain—how the video data associated with the main channels in Ganek could contain *only* the remaining portion of the data, yet ensure that the system retains the functionality described in the reference. It is unclear, at best, how Ganek's functionality could remain viable if the interactive channels contained only the remaining portion of the data—functionality that depends on the main program channels containing the entire video data (FF 1-5).

For the foregoing reasons, Appellants have persuaded us of error in the Examiner's rejection of claim 30. Therefore, we will not sustain the Examiner's rejection of that claim.

Claim 31

We will also not sustain the Examiner's rejection of claim 31 essentially for the reasons indicated by Appellants (App. Br. 7; Reply Br. 4-5). As Appellants indicate (Reply Br. 5), each term of the recited equation is clearly defined in independent claim 26. Moreover, the recited equation clearly and unambiguously defines a particular mathematical relationship

between F_m, K, and N.[4] The Examiner's assertion that there "does not need to be any relationship between K and N" (Ans. 11) is belied by the very mathematical relationship expressed in the equation. In short, the Examiner has not shown—nor can we find—anything on this record that would teach or suggest this particular mathematical relationship.

For the foregoing reasons, Appellants have persuaded us of error in the Examiner's rejection of claim 31. Therefore, we will not sustain the Examiner's rejection of that claim.

CONCLUSIONS OF LAW

Appellants have not shown that the Examiner erred in rejecting claims 26-29 and 32 under § 103. Appellants, however, have shown that the Examiner erred in rejecting claims 30 and 31 under § 103.

ORDER

The Examiner's decision rejecting claims 26-32 is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

[4] Claim 26 defines (1) F_m as the number of segments in an anti-latency data stream; (2) K as the number of segments that the transmitted data is fragmented; and (3) N as the number of interactive data streams.

AFFIRMED-IN-PART

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